

EXAMINATION FOR QUALIFIED MEDICAL LABORATORY TECHNICIAN



Subject: PHLEBOTOMY

Examination Date: 7 October 2023

Time Allowed: 3 hours – 9.30am – 12.40pm
10 minutes extra time for reading the Paper

Candidate Name: _____

Candidate No.: _____

General Instructions

1. Total marks for paper = 100.
2. Marks for each question are as indicated
3. The paper consists of:

	<i>Common</i>	<i>Discipline Specific</i>
Section A, questions 1-30 = Total Marks 15	6 Marks	9 Marks
Section B, questions 31-34 = Total Marks 10	5 Marks	5 Marks
Section C, questions 35-38 = Total Marks 10	4 Marks	6 Marks
Section D, questions 39-42 = Total Marks 05	5 Marks	0
Section E, questions 43-63 = Total Marks 40	10 Marks	30 Marks
Section F, questions 64-65 = Total Marks 20	0	20 Marks
4. All questions are to be attempted.
5. Use of calculator is permitted.
6. Put all answers into the examination booklet provided.

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WORD DEFINITIONS	
Calculate	Perform a mathematical process to get the answer
Classify	Be able to designate to a group
Compare	Detail both the differences and the similarities
Complete	Finish, have all the necessary parts
Convert	Express in alternative units
Define	State meaning clearly and concisely
Describe	Give a complete account demonstrating a thorough practical knowledge
Discuss	Give details, explaining both the positives and negatives
Distinguish	To briefly point out the main differences
Expand	To express at length or in a greater detail
Identify	Recognise according to established criteria
Indicate	Briefly point out
Interpret	Express the results of a test or series of tests in a meaningful format
Label	Give a name to
List	Headings only
Match	Find one that closely resembles another
Name	A word or group of words used to describe or evaluate
Outline	Write brief notes incorporating the essential facts
State	Give the relevant points briefly

SECTION A

Section A – Question 1 to Question 30 = Total Marks: 15

Multi choice questions

Multi choice questions – choose one answer for each question

(0.5 mark per correct answer)

Circle the letter for the correct answer

Example. Which of the below is a primary colour?

- a. Green
- b. Purple
- ☒ c. Red
- d. Orange

C.1 A synovial fluid is taken from

- a. The eye
- b. A vein
- c. A joint
- d. An artery

C.2 The cardiovascular system is also referred to as the:

- a. Circulatory system
- b. Endocrine system
- c. Respiratory system
- d. Lymphatic system

C.3 The Medical Sciences Council is responsible for:

- a. Offering a CPD programme
- b. Issuing an Annual Practicing Certificate
- c. Providing QMLT examinations
- d. Laboratory auditing

C.4 Leukemia is primarily diagnosed in which department in the laboratory?

- a. Haematology
- b. Histology
- c. Microbiology
- d. Biochemistry

- C.5 The prefix “hypo” refers to:
- Inflammation
 - Excessive
 - Increased
 - Decreased
- C.6 Standard precautions refers to:
- Cleaning the laboratory regularly with an appropriate disinfectant
 - Treating all blood and body fluids as potentially infectious
 - Following the rules set by the Health and Safety Officer
 - Compulsory use of Personal Protective Equipment
- C.7 Which best describes confidential information?
- Information given on the understanding that it will not be passed on to others
 - Information that is stamped or marked as “Confidential”
 - Information that can only be passed on to a doctor or family member
 - Clinical details written on a form
- C.8 A pathologist is a:
- Registered Medical Practitioner
 - An advanced Medical Laboratory Scientist
 - A specialized Scientific Officer
 - Registered Clinical Scientist
- C.9 Within the complaints process of The Code of Health & Disability Services and Consumer Rights, the complaint must be acknowledged in writing within how many working days?
- 7 days
 - 10 days
 - 5 days
 - 20 days
- C.10 A method of representing data in a visual, machine-readable form describes:
- A histogram
 - A cell scanner
 - A flow chart
 - A barcode

- C.11 “It is the duty of Members to uphold the dignity and honour of the profession, to accept its ethical principles and not engage in any activity that would discredit the profession” is part of:
- a. HPCA Act 2003
 - b. Health and Disabilities requirement of all staff
 - c. NZIMLS code of ethics
 - d. Medical Sciences Council of New Zealand practitioner requirement
- C.12 Venesection, venipuncture, phlebotomy and blood collection all come under what scope of practice?
- a. Medical Laboratory Scientist
 - a. Medical Laboratory Technician
 - b. Pre analytical Technician
 - c. Health Care Assistant
- D.13 The term “diurnal variation” refers to:
- a. Daily fluctuation
 - b. Seasonal change
 - c. The effect of diuretics
 - d. A variation in urea results
- D.14 What is the additive-to-blood ratio in a citrate tube commonly used for coagulation testing?
- a. 1:1
 - b. 1:3
 - c. 1:5
 - d. 1:9
- D.15 What is the correct order of draw for the following tubes?
- a. Citrate, SST, CPD, Plain, Heparin, Fluoride, EDTA
 - b. Citrate, Plain, SST, CPD, Heparin, EDTA, Fluoride
 - c. Citrate, CPD, Plain, SST, Heparin, EDTA, Fluoride
 - d. Citrate, Plain, SST, Heparin, EDTA, Fluoride, CPD

- D.16 The primary purpose of adding EDTA as an additive in blood collection tube is:
- To bind or chelate calcium ions and prevent coagulation
 - To promote clotting and facilitate laboratory analysis
 - To inhibit platelet aggregation and enhance clot stability
 - To accelerate coagulation by activating clotting factors
- D.17 The timing of specimen collection during Glucose Tolerance Test (GTT) begins:
- After the fasting blood specimen has been collected
 - As soon as the patient begins to drink the beverage
 - When the patient has finished the glucose beverage
 - Before the fasting blood specimen is to be collected
- D.18 The most common antiglycolytic agent in blood collection tube is:
- Potassium Oxalate
 - Sodium Citrate
 - Sodium Heparin
 - Sodium Fluoride
- D.19 If an accidental arterial puncture is suspected during venepuncture, what is the appropriate action after removing the needle?
- Apply a thick gauze with a double bandage
 - Apply pressure until the bleeding ceases
 - Apply an ice pack for at least 5 minutes
 - Elevate the arm for at least 10 minutes
- D.20 Which of the following tests may require special chain-of-custody documentation when the specimen is collected?
- Drug Screen
 - Blood culture
 - Cross match
 - Blood glucose
- D.21 What should be done if blood does not flow into the collection tube after needle insertion?
- Adjust the angle of the needle.
 - Apply more pressure to the site.
 - Withdraw the needle slightly and reposition it.
 - Ask the patient to clench their fist to increase blood flow.

- D.22 Which of the following tests requires the sample to be maintained at 37°C throughout the collection and transportation phases:
- a. Ammonia
 - b. Cryoglobulins
 - c. Calcitonin
 - d. Porphyrins
- D.23 Which vein lies near the brachial artery?
- a. Basilic vein
 - b. Cephalic vein
 - c. Median cubital vein
 - d. Accessory cephalic vein
- D.24 What is the type of urine specimen for culture and sensitivity test?
- a. Timed
 - b. Random
 - c. First catch
 - d. Mid-stream
- D.25 What is the type of specimen for the Ova and Parasites test?
- a. Saliva
 - b. Faeces
 - c. Sputum
 - d. Urine
- D.26 What is the correct order for removing PPE?
- a. Gloves, gown, mask, face shield or goggles
 - b. Gloves, gown, face shield or goggles, mask
 - c. Gloves, mask, face shield or goggles, gown
 - d. Gloves, face shield or goggles, mask, gown
- D.27 What is the purpose of asking relevant history criteria on the New Zealand Blood Service Form for a crossmatch?
- a. To complete the registration process
 - b. To track the family hereditary disease
 - c. To determine the specimen validity period
 - d. To find the compatibility for blood transfusion

D.28 Which statement is relevant to the Synacthen test?

- a. The test measures adrenal gland function
- b. It involves the collection of a urine sample
- c. It is a test used to measure blood glucose levels
- d. The blood sample should be collected in a fasting state

D.29 What is a contraindication of the Mantoux (TB) testing?

- a. People who have never had Active TB
- b. People who have had a reaction less than 15mm
- c. People who have had a blistering reaction in the past
- d. People who had had a viral infection over 4 weeks prior

D.30 When is the preferred time of day to collect sputum samples to detect *Mycobacterium tuberculosis*?

- a. Early morning
- b. End of the day
- c. After eating a meal
- d. There is no preferred time

(Total: 30 marks)

END OF SECTION

SECTION B

Labelling of diagrams e.g. anatomy, hazard identification, instrument



Section B – Question 31 to Question 34 = Total Marks: 10

(Answer all questions)

C.31 Name the following hazard symbols

(1 mark)

(0.5 mark per correct answer)

a.		b.	
----	---	----	--



a. _____

b. _____

C.32 Name the instruments and describe their use

(2 marks)

(1 mark per correct answer)

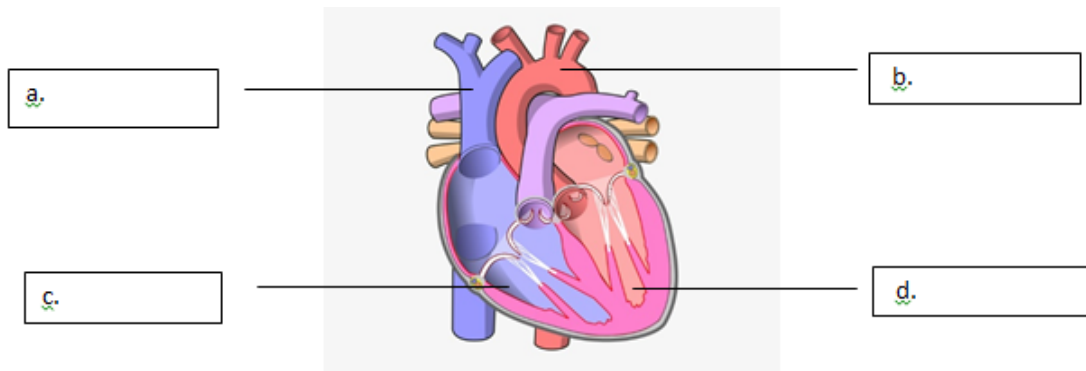
a.		b.	
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a. _____

b. _____

C.33 Label the following diagram:

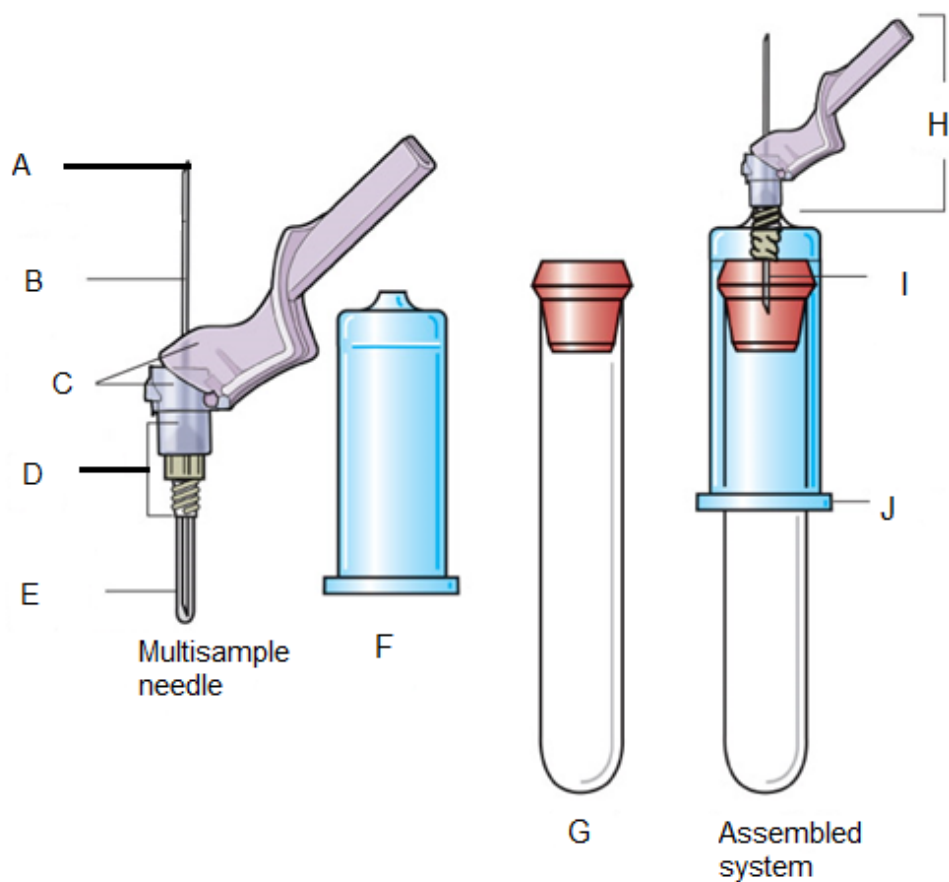
(2 marks)



- a. _____
- b. _____
- c. _____
- d. _____

D.34 Match each word in the word list with the corresponding letter in the diagram. Write your answers in the table below.” **(5 marks)**
(0.5 marks per correct answer)

Word list	Corresponding letter	Word list	Corresponding letter
Safety device		Treaded hub	
Flange		Rubber sleeve over needle	
Shaft		Needle with stopper	
Bevel		Evacuated tube	
Tube holder		Needle with Safety device	



(Total: 10 marks)

END OF SECTION

SECTION C*Tables, match column definition***Section C – Question 35 to Question 38 = Total Marks: 10****(Answer all questions)**

- C.35 Match the columns by **writing the Roman numeral from list B** against the correct match in Column A **(2 marks)**

Column A	Column B
A. Hepatic	i. Knee
B. Nephritis	ii. Liver
C. Patella	iii. Molecular
D. PCR	iv. Kidney

Column A	Column B
A. Hepatic	
B. Nephritis	
C. Patella	
D. PCR	

- C.36 Expand the common abbreviations: **(2 marks)**

A.	B.
a. ACF	
b. CML	
c. COPD	
d. NAAT	

D.37 Match Column A (Medical terms) to Column B (Definitions) and write your answers in the table below. **(Roman numeral only required.)** **(3 marks)**
(0.5 marks per correct answer)

A	B
Haemolysis	i. Infection acquired when admitted in a hospital
Basal state	ii. Sudden loss of consciousness caused by response to pain or stress
Haematoma	iii. Severe life-threatening allergic reaction
Vasovagal Syncope	iv. The resting metabolic state of the body early in the morning after fasting
Anaphylaxis	v. Caused by blood leaking through the vein during venepuncture
Nosocomial Infection	vi. Defined as damage to or destruction of red blood cells

A	B
Haemolysis	
Basal state	
Haematoma	
Vasovagal Syncope	
Anaphylaxis	
Nosocomial Infection	

D.38 Match Column A (Laboratory Test profiles) to Column B (Individual tests included) and write your answers in the table below. **(Roman numeral only required.)**

(3 marks)

(0.5 marks per correct answer)

A	B
Liver Function Tests	i. Lipids, HbA1c, Glucose and Urine Albumin Creatinine ratio
Renal Function Tests	ii. Troponins, Creatine Kinase (CK), Myoglobin, BNP and LDH
Thyroid Function tests	iii. Electrolytes, eGFR, Creatinine, Urea and Magnesium
Diabetic Profile Tests	iv. Iron, Total Iron Binding Capacity and Ferritin
Anaemia Studies	v. Total protein, Albumin, ALT, ALP, GGT, Bilirubin and Globulin
Cardiac Enzyme Tests	vi. Thyroid Stimulating hormone, Free T4 and FreeT3

A	B
Liver Function Tests	
Renal Function Tests	
Thyroid Function Tests	
Diabetic Profile Tests	
Anaemia Studies	
Cardiac Enzyme Tests	

(Total: 10 marks)

END OF SECTION

SECTION D*Calculations***Section D – Question 39 to Question 42 = Total Marks: 5****Calculations**

C.39 A patient has had daily Sodium and Potassium tests done for one week, the results are as follows:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Sodium	135.7	135.9	136.3	136.9	137.2	136.5	135.4
Potassium	3.9	4.2	4.8	4.1	3.8	4.0	3.6

Calculate the mean Sodium and Potassium for the week. (Show all workings)

(2 marks)

C.40 Convert:

(1.5 marks)

32.7 mg to _____ kg

$\frac{5}{8}$ to _____ %

200 uL to _____ mL

C.41 A test has been set up at 1730hrs and has an incubation time of 18 hours, the requester is asking what time they could expect the result (assume the result can be given as soon as the incubation period is complete).

(0.5 marks)

C.42 A colleague accidentally made one litre of 20% solution of Trigene, you have been asked to use that solution and make one litre of 2% Trigene.

Explain your process and show any calculations or workings.

(1 mark)

(Total: 5 marks)

END OF SECTION

SECTION E

Short answer questions (answers = one or more words, short sentences)

Section E – Question 43 to Question 63 = Total Marks: 40

Short Answer Questions

C.43 Define document control. **(2 marks)**

C.44 Outline the First Aid and Treatment for fainting or unconscious episode of a staff member or patient you are working with. **(1.5 marks)**

C.45 When referring to laboratory results the term “accuracy” is best described as: **(0.5 mark)**

C.46 Outline the principle purpose of the Health Practitioners Competency Assurance Act 2003. **(1.5 marks)**

C.47 Describe why user specific passwords are important when using a Laboratory Information System (Computer System) **(1.5 marks)**

C.48 Describe why it is important for the laboratory to have a robust specimen labelling policy. **(1.5 marks)**

C.49 Define Patient/Donor confidentiality **(1.5 marks)**

D.50 Name **FOUR** (4) sites to be avoided during routine blood collections. **(2 marks)**

D.51 a. Define Coagulation. **(2 marks)**
(1 mark)

b. Indicate the role of Fibrinogen in the process of Haemostasis. *(1 mark)*

D.52 Distinguish between arteries and veins by outlining **THREE (3)** differences. **(3 marks)**

D.53 Describe how the phlebotomist would obtain identification from a patient who is unable to speak for themselves and the information that would be required. **(2 marks)**

D.54 Outline the skin preparation and the bottle preparation for a blood culture collection. **(3 marks)**

D.55 Identify **FOUR** (4) reasons for blood specimen rejection that may require the sample to be recollected. **(2 marks)**

D.56 Distinguish between serum and plasma. **(1 mark)**

D.57 a. Define ANTT (aseptic non-touch technique). **(2 Marks)**
(1 mark)

b. Identify **TWO (2)** examples of when ANTT is applied in phlebotomy. **(1 mark)**

D.58 Describe how to clean up a urine spill.

(2.5 marks)

D.59 Indicate why urine for Cytology specimens should **NOT** be early morning urine.

(1 mark)

D.60 Outline the instruction given for the collection of Semen for Fertility purposes.

(3 marks)

D.61 Identify how Quantiferon TB Gold test is collected including **TWO (2)** factors that differentiate it from other routine venepuncture tests.

(2 marks)

D.62 Outline the collection of paediatric urine specimen from an infant or small child who is not yet toilet-trained. **(3 marks)**

D.63 a. Define Skin Prick Testing. **(1.5 marks)**
(1 mark)

b. Identify **ONE (1)** source of error for Skin Prick Testing. (0.5 mark)

(Total: 40 marks)

END OF SECTION

ESSAY

Section F – Question 64 to Question 65 = Total Marks: 20

Essay Questions

ESSAY

Section F – Question 64 to Question 65 = Total Marks: 20

Essay Questions

ESSAY

Section F – Question 64 to Question 65 = Total Marks: 20

Essay Questions

D.64 In essay format, describe the procedure to be followed post Needlestick Injury during venepuncture and discuss **TWO (2)** techniques for prevention of needlestick injuries. **(10 Marks)**

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This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal black lines across its entire width, providing a guide for handwriting or typing. The paper itself is a clean, off-white color.

D.65 In essay format discuss the special considerations, limitations, and potential complications of obtaining a blood specimen from a patient via finger puncture. **(10 Marks)**

[illegible]

[illegible]